

Process for preparing solidified material containing coal ash.**Publication number:** EP0678488**Publication date:** 1995-10-25**Inventor:** SEIKE SHOJI (JP); YOSHIZAWA JUNKO (JP); IMAI OSAMU (JP)**Applicant:** NGK INSULATORS LTD (JP)**Classification:****- international:** **C04B18/06; C04B28/18; C04B18/04; C04B28/00;**
(IPC1-7): C04B18/08**- European:** C04B18/06; C04B28/18**Application number:** EP19950301626 19950313**Priority number(s):** JP19940078466 19940418; JP19940083274 19940421;
JP19940136065 19940617; JP19950006317 19950119;
JP19950006322 19950119; JP19950006324 19950119**Also published as:**

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A process for preparing a solidified material containing a coal ash comprises a first step of mixing the coal ash with a calcium compound to obtain a mixture, a second step of molding the mixture to obtain a molded article, and a third step of subjecting the molded article obtained in the second step to a hydrothermal treatment at a temperature of 120 DEG C or more under a high pressure. In the first step, 40 to 95 parts by weight of the coal ash is mixed with 60 to 5 parts by weight of the calcium compound, and the coal ash to be used has a bulk density of 0.8 g/cm³ or more, an average particle diameter of 5 to 40 μ m and an aluminum content of 35% by weight or less in terms of Al₂O₃. By the use of a blowing agent or the like, it is also possible to obtain a porous light-weight solid. In consequence, there can be obtained the solid containing the coal ash and having a high mixing ratio of the coal ash, an excellent dimensional stability to water, a high strength and a decreased unevenness of the strength, and this kind of solid can be applied to many fields as building materials, construction materials, artificial aggregates and the like. Furthermore, a laminated solid having not only the above-mentioned characteristics but also weight reduction properties can also be obtained, and this solid can be suitably applied to building materials such as panels, blocks, bricks and boards for accoustic use, artificial light-weight aggregates and the like. Accordingly, the coal ash which is an industrial waste can be effectively utilized in large quantities, so that the conventional hard and troublesome problem of treating the coal ash can be solved or relieved.

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United States Patent [19]

Seike et al.

[11] **Patent Number:** 5,584,895[45] **Date of Patent:** Dec. 17, 1996[54] **PROCESS FOR PREPARING SOLIDIFIED MATERIAL CONTAINING COAL ASH**[75] **Inventors:** Shoji Seike, Nagoya; Osamu Imai, Kasugai; Junko Yoshizawa, Nagoya, all of Japan[73] **Assignee:** NGK Insulators, Ltd., Nagoya, Japan[21] **Appl. No.:** 400,972[22] **Filed:** Mar. 8, 1995[30] **Foreign Application Priority Data**

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[51] **Int. Cl.⁶** C10L 5/28; C04B 14/00[52] **U.S. Cl.** 44/598; 44/580; 106/705; 106/DIG. 1; 264/DIG. 49[58] **Field of Search** 44/559, 580, 598, 44/405; 106/DIG. 1, 705, 50, 545; 264/DIG. 49[56] **References Cited****U.S. PATENT DOCUMENTS**

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Attorney, Agent, or Firm—Ronald J. Kubovcik[57] **ABSTRACT**

A process for preparing a solid material containing coal ash includes a first step of mixing coal ash with a calcium compound to obtain a mixture, a second step of molding the mixture to obtain a molded article, and a third step of subjecting the molded article obtained in the second step to a hydrothermal treatment at a temperature of at least 120° C. under high pressure. In the first step, 40 to 95 parts by weight of the coal ash is mixed with 60 to 5 parts by weight of the calcium compound, and the coal ash to be used has a bulk density of at least 0.8 g/cm³, an average particle diameter of 5 to 40 μm and an aluminum content of 35% by weight or less in terms of Al₂O₃. By the use of a blowing agent or the like, it is also possible to obtain a porous lightweight solid. As a consequence, there can be obtained a solid containing coal ash and having a high mixing ratio of coal ash, excellent dimensional stability to water, high strength and a decreased unevenness of the strength, and this kind of solid can be used in applications such as building materials, construction materials, artificial aggregates and the like. Furthermore, a laminated solid having not only the above-mentioned characteristics but also weight reduction properties can also be obtained, and this solid can be used to form building materials such as panels, blocks, bricks and boards for acoustic use, artificial lightweight aggregates and the like.

2 Claims, No Drawings